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AUTHOR Thomson, Nancy S.
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ABSTRACT

Guidelines for designing effective multimedia presentations are presented. The differences between computer-based and computer-aided presentations are highlighted. Advice is given for the effective selection and use of layout, color, sound, and graphics. Room layout, lighting, equipment, and backup are examined and recommendations are made. Examples of both good and bad techniques for involving the audience in the evaluation processes are provided. (AEF)

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Designing Effective PC-Based Multimedia Presentations

Nancy S. Thomson, Associate Professor
Computer Science/Information Systems Department
Northwest Missouri State University
Maryville, Missouri 64468-6001
0100466@northwest.missouri.edu

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Abstract

This tutorial/discussion will focus on the components of effective multimedia presentations. Each of the elements--tools, preparation, documentation, and delivery will be discussed. Differences between computer-based and computer-aided presentations will be highlighted. Effective selection and use of layout, color, sound, and graphics will be included. Other elements, including a discussion of room layout, lighting, equipment, and backup, will be examined and recommendations made. The presentation will use examples of both good and bad techniques as described in the presentation to involve the audience in evaluation processes.

Preparation

The first step to designing any good presentation is, of course, clearly defining one's objective. Once this has been articulated, building the content becomes focused. Additionally, understanding the audience, their background(s), and their expectations will enhance the probability of success for the presenter.

Building the presentation using multimedia resources requires a clarification of the specific role and a determination of the relationship between the presenter and the tools and techniques employed in the delivery. On a continuum from technology driven where the medium actually delivers, (e.g., showing a film), to technology aided where the presenter actually delivers and uses simple tools as aids, (e.g., overheads), this paper reflects the middle ground.

Differences between computer-based and computer-aided presentations relate to the interaction by the audience with the medium versus with the presenter. Computer-based design would primarily rely upon the medium to provide delivery of the intended message. Computer-based training is probably the consummate example of dependence upon the media for delivery. In such case, the presenter is the media. Moving toward a more traditional delivery method implies a human being as the key variable in the delivery and the use of computer-based tools to enhance the message. The key focus of this paper will be the interactive use of computer-based multimedia on a microcomputer with a purposeful balance between the presenter's role and that of the media.

One of the most advantageous benefits of developing computer-based presentations is the ability to change any element or item in the show at any time, even minutes before it is given to the audience. This flexibility allows reuse of effective slides and information with minimal cost and rework. Laptops

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and portable projectors can be effective tools for local or remote sites. Run-time versions of software are generally available with most packages. These allow for transporting only a floppy containing the presentation (and backup disk, of course) that runs on any compatible machine without having to have the specific software installed. However, the disadvantage of this is that without the software one cannot make changes to the slides.

Tools

Available tools include primarily hardware, software, and projection systems. No attempt will be made in this paper to describe all such items that change rapidly and can be used in multiple combinations. However, specific guidelines will help the presenter achieve success regardless of the selected tools. If given the option to select the combination of tools, practicing with them is the only sure-fire way to be sure that the presenter and the tools will be a comfortable and effective team.

If there existed a cardinal rule for microcomputer-based media use, it would be that the user/developer should be seen as an expert in its use by the audience. This includes the PC, MAC, laptop, or whatever size and type of hardware used, as well as the software and projection systems IN COMBINATION. To facilitate this, the presenter should be the one to develop the presentation rather than assign it to assistants or others. The flexibility of tools as well as the individual idiosyncrasies of specific combinations of these three elements must be thoroughly tested before one can be assured of successful interactions. Many presentations have been artfully developed separately and when attached to the projection device, suddenly the colors are different, text is obliterated, and icons or screen sections disappear. Being able to rectify problems with as much poise as one would use to pick up a dropped item from the floor, confirms for the audience that the presenter is in control and has something to offer.

When one has the option to select a presentation software, there are many excellent packages commercially available. Each possesses specific attributes and characteristics for different types of presentation needs. For example, some have excellent linking capabilities for moving around and through the presentation and rearranging the order *ion-the-fly*," while others have to be restarted from the beginning. Some have excellent development tools with automatic charting and graphing capabilities, for example, but may have limited text formatting features.

Generally, packages which are the least difficult to learn, have the most restrictions in design options. For example, there may be restrictions limiting background color or design for the entire presentation. An excellent way to discern the value of a specific presentation software design tool, is to read recent reviews available in the computer trade periodicals or in *Presentations*, a periodical by Lakewood Publications, that provides specific guidance for these choices. Then, before purchasing, test the software with the hardware (both computer and projection device). Occasionally, incompatibilities will arise. This is less likely to happen if your equipment is top-of-the-line and current--as those in education can usually only dream about!

Many new projection devices are equipped with memory functions and will allow for a presentation to be delivered directly from a floppy with no attached laptop or other computing device. Unfortunately, few schools have these newer, more expensive devices available, although they are often seen in the corporate arena. Good reviews are available as mentioned above, as well as in *T.H.E. Journal*.

Knowing how to efficiently and effectively interact with the tools is often prime evidence of the presenter's credibility for an unfamiliar audience. The medium should only enhance the presentation, not be the message itself or impede delivery of it in any way. If faced with using [what is available]," the cardinal rule is to know the equipment and be the master of it by practicing, practicing, practicing.

Development

Preparation. Creating an effective presentation generally requires some general storyboarding of the show to be developed. A storyboard contains a simple sketch of each slide and the accompanying text along with notes for development. This is similar to an outline for the traditional speech except that it contains intended graphics, sound clip notes, video sources, and intended animation features. Each of these elements should be used sparingly to enhance, not disrupt, the intended message and fluid delivery. The storyboard does not have to be sophisticated, but complete enough to facilitate rapid development of the presentation. Linkages and loops among single slides or groups of slides should be noted at this time. Most software packages have a modified form of storyboarding in outline form. If one builds the outline first, then slides can be automatically generated from that text.

Documentation. Documentation such as outlines or notes can usually be created as the computer-based slides are built. Some software packages default to the development of a script or outline which is then automatically translated into slides. Supporting documents such as handouts of slides for distribution can usually be easily generated by the software. It is a good idea to give the audience something to take with them if no relevant documentation is otherwise provided. For example, a condensed copy of slides or a one- or two-page outline of your delivered text complete with title, name, and brief credentials is usually appropriate. Keep in mind when preparing handouts and speaker notes that they should contain much more information than that shown on the slides. Slides should only enhance and emphasize the key points of the presentation, aid in keeping the audience's interest and focus, and facilitate understanding and retention. Keep them simple.

Text. Nearly all slides will need a title. Text should be limited to no more than five lines per slide and no more than five to seven words per line. A simple, easy to read font is best, and use only one style per slide. Continuity of type style between slides enhances presentation continuity and increases readability. Use at least 24 point or greater font size and keep contrast between the text and background at the maximum. Reverse fields and text boxes should be used only occasionally for specific emphasis. Spell checkers are usually a program feature and keep the presenter from overlooking errors in textual information and headings.

Color. Color's main purpose in a presentation is to invoke or encourage emotion in the audience that will enhance comprehension of the intended message. Color selection should be prudent and limiting variations will enhance continuity in the delivery of the presentation. It can be used to enhance three-dimensional effects on slides. Color and color variations can also be used to group objects or define relationships between objects. Similar colors and/or similar hues will cause the viewer to perceive these elements as a group on the slide. With computer-based presentations, in particular, contrast between hues is of vital concern. The greater the differentiation, the greater the visual impact. Maximum contrast between text and background is imperative for readability. Text is the most familiar visual image to an audience, but the most difficult to comprehend in a projected image.

Graphics. The use of graphics, sound, video, and animation should also be used sparingly and only as a means of enhancing communication for a specific purpose. For example, a building flying across the screen will stir a very different connotation for the audience than a bird flying across that same screen. Depending upon the purpose, again, either graphic animation may be effective and have appropriate impact. However, there are some general guidelines for each that will help in determining how to use them.

When using these elements, one usually finds the limitations of the software will limit embedding too many different items on a single slide. (This may be because of the massive memory and processing required and the programmer's penchant for efficiency, or perhaps it is just their way of protecting us from ourselves.) There is a tendency for newcomers to the multimedia arena to want to use every feature in each slide because it is so much fun and relatively easy.

The general rule is to use only one clip per slide and only one per group of eight to ten slides. Select elements carefully depending upon purpose, audience, and facilities. For example, if presenting in a small classroom with a laptop, there will usually be no speaker capabilities unless added externally. What may have sounded great when it was developed on the office machine with attached speakers will suddenly be mute. A great animation that zipped across the screen on the fast desktop lumbers erratically due to the slower clock speed of the presentation computer.

Graphics include charts, graphs, drawings, clip art, or scanned images. They help increase effectiveness by defining relationships between data, providing emphasis or focus, and enhancing retention of the audience. For example, most software packages limit the background template to the same form and color for an entire presentation. This increases continuity, diminishes confusion, and speeds up the process of development.

Graphics tend to be static elements which can usually be sized, rotated, flipped, or animated, if appropriate. Most software packages allow for grouping and ungrouping, coloring, and reshaping of objects. The objects should be carefully selected for simplicity and clarity in conveying or enhancing the intended message including appropriate use of color. Most software packages include multiple examples of these and many independent providers have made numerous selections available. Specialty topics can generally be found on subjects ranging from holidays to sports and religion. The World Wide Web services on the Internet are also a valuable resource for graphics files that can be downloaded and sometimes appropriately formatted for inclusion in a slide.

Charts and graphs can be used effectively to quickly show relationships and trends. Pie charts, for example, are excellent for expressing proportion. Good formatting of charts allows for multiple views of complex data in a simplistic format. Bad charting, can destroy credibility as well as presentation effectiveness. The advantage of charts and graphs using computer-based means is the editability of all components from the data itself to the formatting structure. Pictures can also be used to enhance understanding as either data elements themselves or additions to the graphs such as arrows pointing to significant data.

Sound and video. Sound clips and video clips are readily available as part of most presentation software packages. These are copyrighted, however, and may not be included in any commercial applications.

Currently on the market are several relatively inexpensive, non-copyrighted sound and video clips. There is also the option of creating one's own clips using camcorders and using a special sound card for converting those into digital format. This is a very time-consuming set of tasks, however, and one should weigh the development time investment against the benefits of a five- or ten-second clip, for example. There are also many media items available via the Internet for downloading.

Video clips generally project better when sized to approximately a two to three inch insertion box on the slide. Larger images can often appear jerky or grainy when projected. Keeping them small enhances their presentation quality, but diminishes the perception of the fine detail for the audience. Therefore, care must be taken to select video images which give the message clearly at this level. For example, if one wanted the audience to see a facial expression from a clip of a head shot, it may be difficult to pick up. Enlarging the shot to pick up this nuance will diminish the clarity of the visual image and fluidity of the motion. What looks appropriate three feet from the computer screen may not be acceptable at a distance of thirty feet from a projection screen.

Animation. Animation generally involves the movement of a static object from one location to another and, perhaps, resizing it. Often, software packages include some limited animation for bringing in bullets for listings or moving text from multiple directions onto a screen. Simple animation allows the builder to take a clip image of a truck or airplane, for example, and make it move across the screen. Usually it is in only one direction and at only one speed. Sometimes, the size can be changed in the process. More sophisticated software allows for morphing images (changing one image into a completely different one such that it appears the second one evolved from the previous). This should be used very sparingly and only as appropriate. Very expensive and sophisticated resources allow for animating any screen item and rolling them onto and off the screen in multiple patterns. These are generally not used except in commercial applications.

Delivery

Presentation staging is often limited by existing facilities. One of the key problems with computer-based presentation delivery, particularly in large rooms, is the need to reduce the room lighting to the level of moonlight. This diminishes the status of the presenter and limits interaction with the audience. The focus then falls upon the medium and can often negate the impact of the spoken word. Obviously, the key is to get the most light on the speaker and the least light on the screen where the projection resides, which is often a difficult if not impossible task. Using light backgrounds on slides gives more room light and better reflection for the speaker. Dark backgrounds may have strong impact visually, but tend to draw the eye to very limited areas of the screen and make visual continuity between the speaker and the screen difficult. Apart from packing around portable spotlights, this problem is often the least reconcilable.

Effective staging allows for the projection screen to be above the head level of the audience and extend at an angle equal to the angle of the projection source. This prevents skewed images that appear to expand as they rise higher on the screen. Positioning is dependent upon room size, distance from the projection device, as is size, elevation, and tilt of the screen. Since the eye tends to move from left to right in accessing information, the speaker should try to stand to the left of the screen from the audience's perspective. This gives the presenter the command position relative to the media.

One constant which can be depended upon when setting up for a presentation is that something will not work properly. It is imperative that set-up take place as early as possible before the presentation's scheduled start time. If taking place at a facility which furnishes experts to assist, their expertise will definitely vary and they may not be familiar with an individual's own equipment. If preparing for delivery in a classroom or other school facility, often limited areas are available for placement of equipment or electrical supply inadequate. (Always have a power strip with at least 15 feet of cord and, if traveling, 50-foot or greater extension cord.)

Some rules of thumb can help the multimedia presenter decide upon the probability of effective delivery. If using text on the screen, use the eight-to-one rule. This rule relates the height of the projected screen to its distance from the audience. Using 24-point text on a five foot screen would mean that the last audience row should be no more than forty feet from the image.

In addition, it generally works best to load the presentation on the hard drive of the computer rather than run it from the floppy. The file loading will be much quicker and, therefore, the presentation will run more efficiently. Avoid using laser pointers as they are almost impossible to hold steady and result in a trembling effect on the projected image. Drawing pens which can be picked up from a screen image by the mouse are also minimally effective as lines will generally not be smooth nor look professional. Remote devices for advancing slides and moving the mouse are especially helpful and effective and give the presenter freedom to move away from the computer source.

Backup

Presentations can be saved to the hard drive of a laptop and should be backed up to a floppy. If transporting the presentation only as a file to be used on someone else's equipment, then files should be backed up on separate floppies. Do not carry the two copies in the same folder or carrying bag.

Given the high probability that something will go wrong with the technology, backup is absolutely necessary. If alternative equipment is available, however, time would be needed to become familiar with the differences which will undoubtedly appear. A practice run-through or two will verify the compatibility of the show and the equipment. Otherwise, it is prudent to carry foils or transparencies of the slides. Since these will not contain sound, animation, or motion video, and sometimes limited color, more drama and animation may be necessary in the oral delivery. This is, however, heavily dependent upon the purpose of the presentation.

Summary

This paper has described some of the basic elements of computer-based multimedia design and development. Tools and design criteria vary significantly depending upon purpose and equipment used. These guidelines are not intended to be product specific, but generally applicable for those building and using computer-based multimedia. It is the result of six years of building media-based presentations and teaching students to use the media. The general guidelines presented in this paper are intended to give the novice user an introduction to planning for, developing, and working with computer-based multimedia presentations. The conference presentation includes examples of these guidelines.